AIM and Supplemental Measures:
FY03 Attrition Screening Study

Presented to:
U.S. Army Accessions Command
Accessions Research Consortium

Hampton, Virginia

20 – 22 May 2003

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Briefing Overview

- **Background:
   Past ARI attrition screening research & lessons learned**

- **Attrition Screening in GED Plus Program**

Project A research (in 1980s) identified three kinds of soldier success indicators:

- "__Can Do__" performance = proficiency on defined tasks

- "__Will Do__" performance = motivational components of
    performance (effort & leadership; personal discipline;
    fitness & military bearing)

- __Attrition__

"Can Do" Versus "Will Do" Performance

- ASVAB predicts "Can Do" performance extremely well

- "Will Do" performance not predicted as well by ASVAB

- Attrition is poorly predicted by ASVAB-AFQT. Educational attainment is the primary indicator of attrition propensity

  ➢ New predictors needed

Screening tools developed for recruits in all Educational Tiers:

- **Self-report biodata measures of motivational attributes / temperament**
  - ➢ <u>Assessment of Background and Life Experiences</u> (ABLE)
    (Developed under Project A in the 1980s)

  - ➢ <u>Assessment of Individual Motivation</u> (AIM)
    (Developed in the late 1990s)

- **Supplemental measures**
  - ➢ Objective / verifiable measures collected during routine applicant

    processing, or self-report items obtained from surveys
  - ➢ Combined and statistically weighted to create attrition screening
    measures (Compensatory Screening Model, CSM)

- **<u>Application / entry measures</u>:**
  - ➢ Education credential
  - ➢ Years of education
  - ➢ Age at application
  - ➢ Body Mass Index
  - ➢ ASVAB subtests

- **<u>Self-report items from special surveys</u>**
  e.g., Secretary of Army "Background Questionnaire" from GED Plus;
  "Soldier Reception Survey" from ARI's First Term Project

  - ➢ Parent's involvement in military
  - ➢ Extracurricular activities in high school (scouts, clubs)
  - ➢ Participation in youth military programs (e.g., JROTC)
  - ➢ Army career intentions
  - ➢ Employment history
  - ➢ Completion of job certification program

ARI Research With
Compensatory Screening Models (CSM)

- **<u>1992</u>: Preliminary effort to develop a single CSM for use**
  with all Educational Tiers (White & Young, 1992)

  ➢ Model showed improved attrition prediction over the current system
  ➢ Measures: Education credential, years of education, age,
    ASVAB-Math Knowledge, & youth military training

- **<u>1993</u>: Implementation of CSM for NHSDG screening to**
  reduce attrition (Young & White, 1993)

  ➢ Used for screening Tier 1 (One Semester and Adult Ed only), Tier 2,
    and Tier 3 recruits to reduce attrition
  ➢ Screening withdrawn within months partly due to a difficult recruiting
    environment
  ➢ Recruiters used worksheet to compute CSM score for applicants
  ➢ Points assigned based on applicant's years of education, education
    credential, age, military youth program participation, & AFQT

Assessment of Individual Motivation (AIM)

- **27-item, self-report measure of Dependability, Adjustment, Physical Conditioning, Leadership, Work Orientation, and Agreeableness**
  - Now administered in paper form; Takes < 30 minutes to complete
  - No adverse impact
  - Developed to predict "will do", motivational aspects of performance
    - (Effort & Leadership, Personal Discipline, Fitness & Military Bearing) and attrition

- **Successor to self-report instrument, ABLE from Army's**
  Project A, but designed to be more resistant to faking

- **AIM scores predictive of training performance in**
  research sample
  - Participation in "See It Through Program" (Fort Jackson)
  - Articles 15 (Fort Jackson, Fort Knox)

AIM Research Database

• **ARI study (1998 – 1999) showed AIM predicts training**
  attrition among Army recruits

  (Young, Heggestad, Rumsey, & White, 2000)

  - Over 20,000 RA recruits tested on AIM at Reception Battalions
  - Testing for "research purposes only"
  - Tested recruits tracked to obtain attrition status
  - Positive validity findings led to AIM's use in GED Plus pilot program
  - Predictive validity compares favorably to that of HSDG status
  - Supplemental measures from multiple sources merged with individual
    recruit data

Comparison of AIM & High School Diploma as Predictors of 18-Month Attrition (N = 21,038)

- **AIM score predicts attrition better than HSDG status**

  (r = -.112 vs. -.085)[a]

  Based on *research sample* of 21,038 Regular Army recruits who completed AIM at all Reception Battalions from SEP 1998 – MAY 1999

Attrition Rates By AIM / HSDG Status

Low AIM (lowest 15.9%)	**34.6%**
Higher AIM (top 84.1%)	**21.6%**
Non-HSDG (15.9%)	**32.0%**
HSDG (84.1%)	**22.1%**

[a]Phi coefficients are presented. To compute this coefficient for AIM, AIM is scored dichotomously with 0 as the lowest 15.9% of AIM scores which corresponds to the % Tier 2 in the sample. The corresponding point-biserial correlation is -.135.

• **AIM performs at least as well as HSDG status -- the "gold**
  standard" – for predicting early first-term attrition

  (see Young, Heggestad, Rumsey, & White, 2000)

• **Magnitude of AIM's validity as attrition predictor is**
  comparable to that of its precursor – ABLE

• **Attrition screens with AIM's/ABLE's level of validity have**
  been shown to have positive utility in those markets
  where recruiting costs are relatively low

  (from White, Nord, Mael, & Young 1993; White, Young, & Rumsey, 2001)

      - NHSDG (Tier 2 and Tier 3)
      - HSDG in CAT IV

• **Soldiers who attrit by 24 months are much poorer performers**
  than those who complete their enlistment (Project A data reported by
  White, Nord, Mael, and Young, 1993)

• **The temperament measures (AIM/ABLE) that predict attrition**
 are also generally predictive of training and job performance

• **ARI's NHSDG CSM predicted job performance in the Project A**
  database (r = .27; even though this measure was only keyed to

predict attrition)

   (Young & White, 1993)
       -Simulations indicated that NHSDG selected in the upper half of the CSM score distribution
         would perform at a level comparable to HSDG in CAT I-IIIA
       - Lowest 20% on CSM projected to perform worse than HSDG CAT IV

• **Desirable to link operational AIM / attrition screen**

Attrition Screening in GED Plus Program

- **AIM introduced as attrition screen under GED Plus pilot**
  program in FEB 2000
  - – Goal: "Screen In" lower attrition risk NHSDG while expanding market
  - – AIM worked well in research setting where test didn't count
  - – AIM not previously tested in "operational" environment
  - – Since FY01, ARI has been evaluating AIM's performance as an operational
    attrition screen

- **Operational AIM Database from GED Plus (2000 – 2003):**
  Used to evaluate alternative NHSDG attrition screening
  measures
  - Over 20,000 RA applicants tested on AIM at the MEPS since FEB 00
  - 9-month attrition data now available for 10,000 accessions
  - Data are updated with new separation information on a routine basis
  - Supplemental measures from multiple sources merged with

Attrition Screening in GED Plus Program

- **Initial AIM composite score has performed poorly as an**
  attrition predictor

- **ARI proposed new attrition screen to replace operational**
  AIM score (4th Quarter 02)
  - Restores validity to level observed in research sample
  - New screen combines revised AIM scoring (U of Illinois) with supplemental measures
  - Proposal briefed to LTG Cavin (JUL 02)
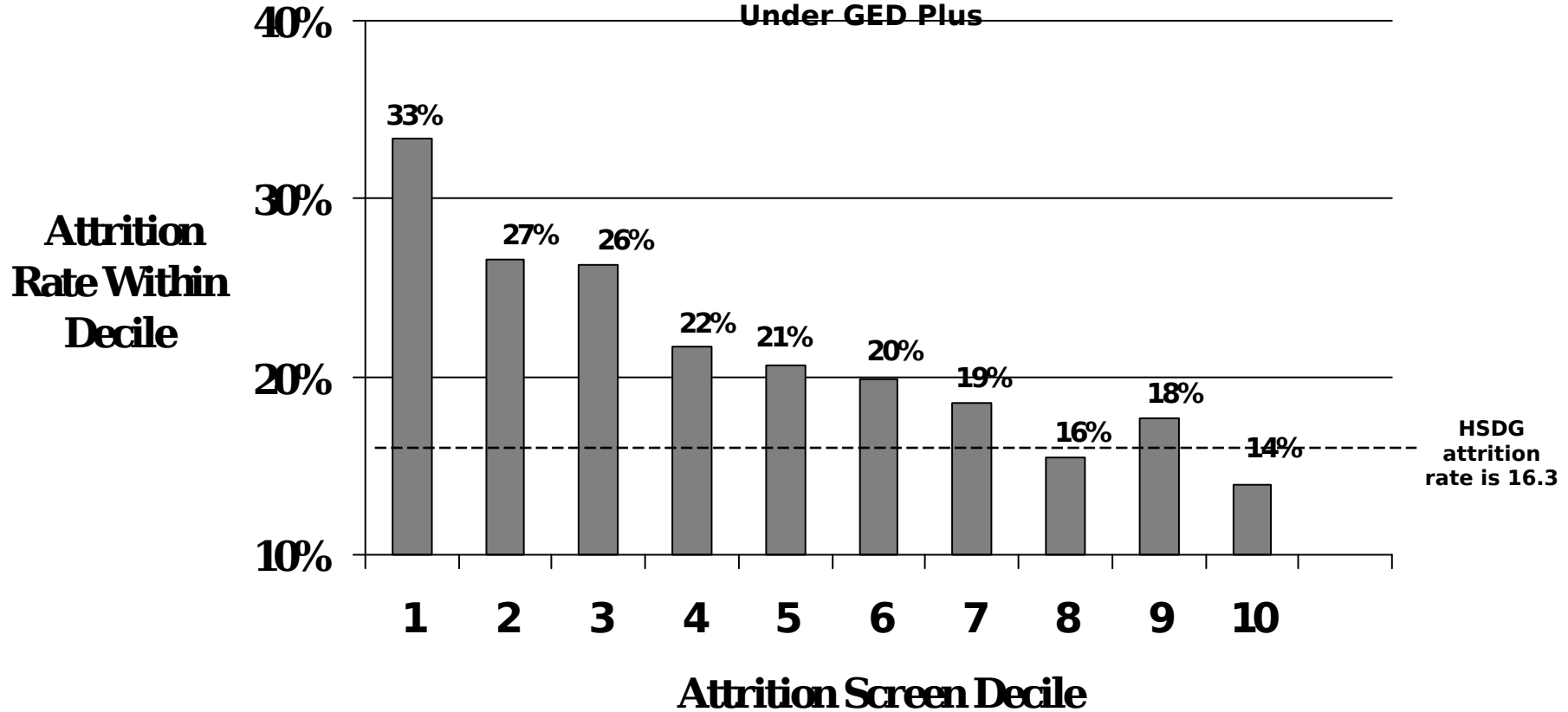 - Reviewed by HumRRO, Univ of Illinois, and RAND

Relationship between New Attrition Screen and 9-Month Attrition
Among GED Plus Applicants (NHSDG)
New AIM Scoring + Supplementals

(AIM, ASVAB MC, MK, & VE, + Age + BMI)

Proposed as Replacement for Current Operational AIM Score Under GED Plus

Chart: Attrition Rate Within Decile (y-axis, 10% to 40%) vs Attrition Screen Decile (x-axis, 1 to 10)

- Decile 1: 33%
- Decile 2: 27%
- Decile 3: 26%
- Decile 4: 22%
- Decile 5: 21%
- Decile 6: 20%
- Decile 7: 19%
- Decile 8: 16%
- Decile 9: 18%
- Decile 10: 14%

HSDG attrition rate is 16.3

Note: Deciles based on operational sample norms.

Attrition Rate=21.4%
Nongraduate Accessions ($n =$7,019)

$r = -.138$ ($p < .05$)

- **Continue evaluating and improving NHSDG attrition**
  screening measures under GED Plus Program
  - Periodically update operational AIM database (HumRRO)
  - Develop method to adjust AIM scores for faking (Univ of Illinois)
  - Track performance of proposed attrition screen against newer data (ARI)

- **Determine what attrition screening tools are being used**
  by other private and pubic sector organizations
  - Literature review by Univ of Illinois

- **Make recommendations for screening tools and**
  supporting research for Objective Force requirements
  - Draft Study Report expected 4th Quarter 03